

19. Describe the use and manipulation of arrays in programming. Compare and contrast one-dimensional and two-dimensional arrays with examples.
20. Elaborate of Data Flow Diagrams, including their symbols, types, and the role they play in system analysis and design.
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APRIL/MAY 2025

**23UFDA14 — PROBLEM SOLVING
TECHNIQUES**

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

Answer ALL the questions.

1. Define hardware and software.
2. What are the main components of a CPU?
3. List any two difference between system software and application software.
4. How can be an algorithm be defined?
5. List basic flowchart symbols.
6. What is the purpose of pseudocode in programming?
7. Define counter-controlled loops.
8. What is a one-dimensional array?



9. State Data Flow Diagram?

10. List out any two types of errors that can occur in a program?

SECTION B — (5 × 5 = 25 marks)

Answer ALL the questions.

11. (a) Write about the characteristics and limitations of computers.

Or

(b) List the different types of secondary storage devices.

12. (a) Discuss the phases in the Program Development Cycle (PDC).

Or

(b) Highlight the features of a good algorithm.

13. (a) Explain relational and logical operators with examples.

Or

(b) Discuss the applications of nested loops in programming.

14. (a) Describe character-based data and numeric data.

Or

(b) Explain how strings can be represented as arrays of characters.

15. (a) Define program modules and their importance in programming.

Or

(b) Detail the process of reading and modifying sequential files.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Explain the architecture of a computer system, focusing on the interaction between hardware components and software.

17. Discuss structured programming concepts, emphasizing the importance of algorithms, flowcharts, and pseudocode in program development.

18. Illustrate selection structures in programming, providing examples.

